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OLDER ADULT IN METHADONE TREATMENT: SOCIO-ECONOMIC STATUS AND CHRONICITY

ADULTOS MAYORES EN TRATAMIENTO CON METADONA: POSICIÓN SOCIOECONÓMICA Y CRONICIDAD

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Abstract

Introduction: People on methadone treatment are aging, becoming chronic and increasing the presence of chronic diseases. Aim: To examine the characteristics of older adults in treatment with methadone in relation to determine socio-economic status, chronic diseases and how to tackle this chronicity. Method: A scoping review was conducted for articles published since 2004 up to May 2020, in English and in Spanish. Results: This process left twenty-five documents. The 66,6 % were from the North America. Fourteen publications referred to the factors determining socio-economic status: increase in mean age, economic instability, social exclusion, and stigma. Only one had a gender perspective approach. Nineteen publications referred to chronic physical and mental diseases. In relation to tackling chronicity, were found sixteen publications: multidisciplinary care and participation in the treatment were appreciated as something important. Conclusions: The increasing age of people who are on methadone treatment and their specific needs is evident, so it will be necessary to adapt care and resources. Owing to the scarcity of studies found, especially beyond the North American continent, this phenomenon requires further study, most particularly from a qualitative approach and a gender perspective, to benefit from the point of view of those receiving the treatment.

Resumen

Introducción: Las personas en tratamiento con metadona están envejeciendo, cronificándose y aumentando las enfermedades crónicas. Objetivo: Examinar las características de los adultos mayores en tratamiento con metadona en relación con los determinantes del estatus socioeconómico, las enfermedades crónicas y el abordaje de esta cronicidad. Método: Se realizó una revisión de artículos publicados desde 2004 hasta mayo de 2020, en inglés y en español, obteniendo veinticinco documentos. Resultados: El 66,6% eran de América del Norte. Solo uno con enfoque de género. Catorce referían determinantes del estatus socioeconómico: aumento de edad media, inestabilidad económica, exclusión social y estigma. Diecinueve se refirieron a enfermedades físicas y mentales crónicas. Con relación al abordaje de la cronicidad, se encontraron dieciséis publicaciones: la atención multidisciplinar y la participación en el tratamiento como se consideró como importante. Conclusiones: La edad cada vez mayor de las personas que están en tratamiento con metadona y sus necesidades específicas es evidente, será necesario adaptar su atención y los recursos. Debido a la escasez de estudios encontrados, especialmente fuera de EEUU, este fenómeno requiere un mayor estudio, particularmente desde un enfoque cualitativo y perspectiva de género, para tener en cuenta el punto de vista de quienes reciben el tratamiento.

Keywords

Methadone; Aging; Chronicity; Determinants of Socioeconomic Position; Gender.

Palabras clave

Metadona; Envejecimiento; Cronicidad; Determinantes de posición socioeconómica; Género.

Introduction

More than half a century has elapsed since Dole and Nyswander first treated heroin addiction with methadone (Dole & Nyswander, 1965). Since then, the effectiveness of this treatment has been proved worldwide, not only by the reduction in opiates consumption (Mattick et al., 2009), but also by this population's higher quality of life and social welfare (Tran et al., 2016; Ubuguyu et al., 2016), rendering it an effective public health tool for controlling prevalent diseases such as HIV or HCV (Chang & Lin, 2015).

In recent years, heroin consumption trends and, hence, new patients in treatment with methadone, have gradually declined (EMCDDA, 2020) although many people are still being treated with this therapy (Madrid Salud, 2018). In over 50% of these cases, the treatment duration is five or more years, and the average age of patients treated with methadone has risen to over 50 years and is expected to increase further (EMCDDA, 2020) As a consequence, chronic pathologies such as COPD, hypertension or diabetes are being diagnosed early among this population (Maruyama et al., 2013), as well as a higher incidence of mental disorders (Rosen et al., 2011).

These treatments, that began as a harm reduction strategy (Mattick et al., 2009), have become chronic with the increase in mean years of duration, owing to which the original aims no longer fit the current needs of patients who, having aged, require assistance to stay healthy and preserve their quality of life (Doukas, 2014; Gol-Montserrat et al., 2018; Weiss & Rao, 2017).

To these patients' ageing we must add their social, family, and personal vulnerability, as described in the Red Cross vulnerability report (Rúa Vieites et al., 2017) and higher exposure to health-related social inequalities (WHO, 2016) and, therefore, different opportunities for accessing resources and greater social exclusion (Dirección General de Salud Pública y Sanidad Exterior & Ministerio de Sanidad y Política Social, 2012).

According to the strategy for treating patients with chronic diseases in the Region of Madrid "not all chronic patients are the same and not all patients have the same needs: proper identification of patients with more complex needs is key to meeting their social and health-related needs" (Consejería de Sanidad de la Comunidad Autónoma de Madrid, 2013). Therefore, this scoping review aims to examine the characteristics of older adults in treatment with methadone in relation to the factors that determine socio-economic status, patients' chronic problems and how to tackle this chronicity.

Method

A scoping review was conducted following the six steps described by Levac et al., 2010:

- Identifying the research question. The question guiding the research was: What are the factors that determine socio-economic status, chronic health problems and the specific traits of people who are ageing while in treatment with methadone?

- Identifying the relevant studies. A search was conducted for articles published since 2004 –the year in which the WHO described opiate addiction as a chronic disease, and therefore susceptible to treatment (OMS & Management of Substance Dependence Team, 2004)- both in English and in Spanish, up to May 2020, on the Pubmed, BVS, Scielo, Cinhal, Cuiden and Google Scholar databases, using controlled and open language, combined with the Boolean operators "AND" and "OR" (Table 1). Studies on methadone or opiate substitution treatment in people 45 years and older were included. As exclusion criteria were considered studies referring to: opiates other than methadone, palliative treatment for pain and only to opiate consumers who were not in treatment with methadone.

Table 1. *Database search syntax*

Database	Search Syntax
PUBMED	methadone AND middle aged NOT (cancer OR pain) methadone treatment AND (middle aged OR aged OR older adult) NOT (cancer OR pain) opiate substitution treatment AND aging NOT (cancer OR pain)
BVS	methadone NOT cancer NOT pain
SCIELO	methadone methadone NOT cancer NOT pain
CINHAL	methadone AND (aging or ageing or elderly or older adults or seniors or geriatrics) NOT cancer pain opioid substitution treatment AND (aging or ageing or elderly or older adults or seniors or geriatrics) NOT cancer pain opiate replacement therapy AND (aging or ageing or elderly or older adults or seniors or geriatrics) NOT cancer pain
CUIDEN	methadone methadone
GOOGLE SCHOLAR	methadone opioid older OR aging OR elderly OR adults -cancer -pain -buprenorphine

- Study selection. Documents were selected initially for their title, then for their abstract and, lastly, after reading the full document. The eligibility criteria used for selection were: 1) both quantitative and quantitative research papers, as well as literature reviews and doctoral theses. 2) the works had to answer the research question, so they were dismissed:

- Those showing only the increase in age of drug consumers not in treatment with methadone.
- Those drawing comparisons with replacement treatment: methadone vs. buprenorphine or naloxone.
- Those referring only to the effects of methadone treatment, but not specifically to an older adult population.
- Those centred only on the methadone stigma, without taking subjects' age into account.

- Data extraction. The selected documents were analysed with a view to obtaining data in answer to the research question.

a) Determinants of socioeconomic status: age, gender, social class (occupation, level of education, income).

b) Chronic problems: HIV, hepatitis, mental disease, hypertension, diabetes, lung disease, other ageing-related diseases.

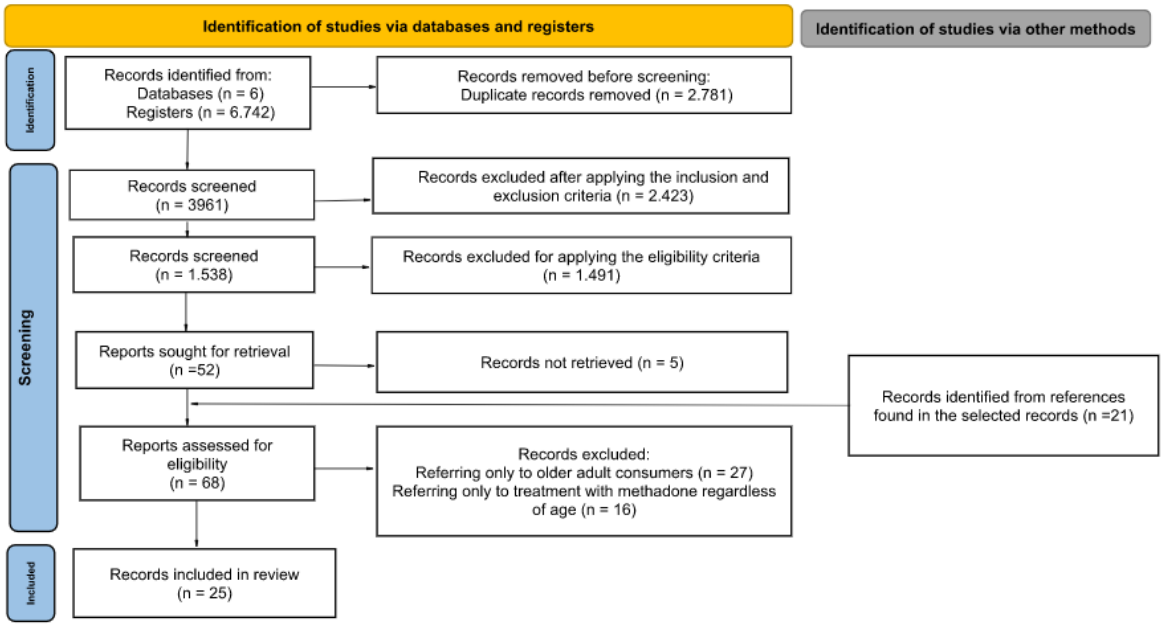
c) Tackling chronicity: problems involving chronic consumption of other substances, social exclusion, chronicity, mean treatment duration, medication collection characteristics, care characteristics, future considerations.

- Collating and reporting the data. Two analytical frameworks were applied to data analysis and subsequently drawing up the summary of results. The first of these was the form "*Framework for Action on the Social Determinants of Health"* (Solar & Irwin, 2007) to obtain the determinant factors for socio-economic status; and the second, for chronic problems and tackling chronicity, *'Estrategia de Atención a Pacientes con Enfermedades Crónicas en la Comunidad de Madrid'* (Consejería de Sanidad de la Comunidad Autónoma de Madrid, 2013), which analyses both ageing and growing rate of chronic diseases among the population and how these affect quality of life, highlighting the need for a change in the model for caring for these patients.

Results

In the databases consulted, 6742 documents were found with references to some of the search criteria for the research question. Of these, 2781 duplicate results were eliminated, leaving 3961. Inclusion and exclusion criteria were then applied, leading to the exclusion of a further 2423 documents, which left 1538. Following this, applying eligibility criteria 1491 documents were dismissed for referring to opiates other than methadone or to palliative treatment for pain, after which 47 documents remained for reading in full. Another 21 articles were included thanks to references found in the selected documents, raising the total to 68. After a close reading of these documents, 27 were eliminated for referring only to opiate consumers who were not in treatment with methadone, 16 were dismissed for referring solely to characteristics of methadone treatment without considering patients' age. This process left 25 documents that matched the aims of this study for an in-depth analysis (Figure 1).

Figure 1: *Flow diagram*



Of the 25 studies analysed (Table 2), all in English except for one written in Spanish. We found 12 articles used quantitative methodology and five studies used quantitative methodology. One article combined both quantitative and qualitative methodologies, while the remaining seven articles consisted of literature reviews, one of which was specific to qualitative studies.

Table 2. *Description of the selected documents*

Authors and Country	Type of Study	Study Sample	Instrument of Measure and/or Variables Analysed
(Firoz & Carlson, 2004) USA	Quantitative cross-sectional descriptive study	Older patients (≥55 years) N=705; Men n=367 (68%), Women n=338 (48%) Young adults (≤54 years) N=54; Men n=37 (68%), Women n=17 (32%)	Questionnaire ASI*
(Lofwall et al., 2005) USA	Quantitative cross-sectional descriptive study	Older adults' group (50-66 years) N=41; Men n=21, Women n=20 Young adults' group (25-34 years) N=26; Men n=11, Women n=15	Diagnoses: DSM- IV Questionnaires: - ASI - SF-36
(Rosen et al., 2008) USA	Quantitative cross-sectional descriptive study	People ≥50 years in treatment with methadone N=140; Men n=92, Women n=48	Questionnaires: - SF-12 - Register of chronic diseases - Urine test
(Conner & Rosen, 2008) USA	Qualitative study	People ≥50 years in treatment with methadone N=24; Men n=10, Women n=14	Semi-structured interviews
(Rajaratnam et al., 2009) USA	Quantitative cross-sectional descriptive study	N= 156 ≥ 55 years: n=45 24-54 years: n=111	Questionnaires: - MMS - ASI - BSI - QOL - Measure of impulsivity
(Hamilton & Grella, 2009) USA	Qualitative study	Eight groups per gender Men n=19, Women n=19 All over 50 years of age	Focus groups
(Conner et al., 2010) USA	Qualitative study	People ≥50 years in treatment with methadone Men n=10, Women n=14	Semi-structured interviews
(Tuchman, 2010) USA	Quantitative cross-sectional descriptive study	135 women between 40 and 55 years of age	Guide featuring 14 symptoms of menopause and structured interviews
(Guo et al., 2010) Singapore	Quantitative cross-sectional descriptive study	Patients ≥ 60 years in treatment with methadone for 3+ years (N=40); Men: 32 (80%), Women: 8 (20%), Carers (N=33)	Diagnoses: DSM- IV Questionnaires: - SF-36* - SOWS* - HADS*
(Rosen et al., 2011) USA	Literature review	Studies on PST therapy* in older adults	PST Treatment for comorbidity in substance addiction and mood disorders Major opiate addicts
(Rosen et al., 2011) USA	Systematic literature review	Studies conducted in the USA only 14 studies: 9 quantitative, 5 qualitative. 7 specifics to MMT	- prevalence of mental diseases - prevalence of physical diseases - consumption or not of illegal substance and alcohol

(Dürsteler-MacFarland et al., 2011) Switzerland	Quantitative descriptive retrospective study	N=2153 Year 1996 n=1195 Year 2003 n=958	Review of clinical histories to determine: - Sex - Age - Marital status - Dwelling type - Level of education - Occupational status - Consumption during the previous month
(Maruyama et al., 2013) Canada	Quantitative analytic-observational study of control cases	Patients over 50 years of age. Cases N=199; Men n=143 (71.9%), Women n= 56 (28.1%) Control N=199; Men n=143 (71.9%), Women n= 56 (28.1%)	Database: Pharma Net - COPD - Hypertension - Diabetes - Depression
(Notley et al., 2013) UK	Systematic qualitative review	N=14	- Prescription of methadone - Opinions of users or clinicians on experiencing long-term treatment - Qualitative studies, or studies including qualitative methodologies.
(Doukas, 2014) Canada	Literature review	Studies involving interventions with older adults in treatment with methadone (n=21)	- Comorbidity of physical and mental diseases - Stigma - Needs for specific care - Benefits of specific care
(Searby et al., 2015) Australia	Literature review	Publications: 1999-2014 n=20	- Dual pathology - Older adults - Methadone maintenance treatment
(Notley et al., 2015) UK	Qualitative study	N= 27; Men: 18 (66.6%), Women: 9 (33.3%) 5+ years in treatment with methadone on a stable basis	Semi-structured interviews
(Engel & Rosen, 2015) USA	Quantitative cross-sectional descriptive study	N=130 Over 6 months in treatment ≥ 50 years	Questionnaire Lie/Bet Permanence in treatment Negative toxicological tests
(Mortazavi et al., 2015) Iran	Quantitative cross-sectional descriptive study	N=160; Men n=153 (95.6%), Women n= 7 (4.4%)	Questionnaire *SCID
(Hightower, 2016) USA	Qualitative study	N= 8; Men n=4, Women n=4 Age: 50-55 years Two or more years in treatment	Semi-structured interviews with a phenomenological perspective
(McCall et al., 2017) USA	Controlled randomised analytic-experimental quantitative study	N=132; Men n=94, Women n=38 Age: 50 years or over Diagnosis of addiction and psychiatric pathology	Patient Health Questionnaire (PHQ)-9 Control group: traditional therapy Intervention group: traditional therapy plus PTS
(Doukas, 2017) Canada	Literature review	N=26	People ≥50 years in treatment with methadone - Studies published in the last 30 years
(Carew & Comiskey, 2018) Ireland	Literature review	N=76 (only 14 of these are discussed)	- Studies published up to 2015 - Ageing among opiate consumers - Treatment objectives and ageing

(Pierce et al., 2018) UK	Quantitative cross-sectional descriptive study	Subjects included in the NDTMS* of England. n=129.979 (in MMT n=271) at 45+ years	- Treatment period - Age - Gender - Declaration of self-injection - Declared alcohol consumption - Declared consumption of benzodiazepines - Declared cocaine consumption - Declared amphetamines consumption
(Gutiérrez-Cáceres et al., 2019) Spain	Mixed methodology in two phases: a) quantitative: cross-sectional descriptive study b) qualitative	a) N=192; Men n=156, Women n=36 b) N=4; Men n=2, ≥60 years, Women n= 2, ≥50 years	a) Socio-demographic: age, gender, country of origin, education level - Treatment: dispensing centre, family support, coexistence, age at first use, years in treatment -Clinical: HIV, HCV, Mental illness. b) Semi-structured interviews with a phenomenological perspective

Having analysed the content of these studies from the research aims our findings were (Table 3):

a) **Regarding the determinants of socio-economic status (Solar & Irwin, 2007)**

The age range for the concept of older adult was variable, the most used being 50 years of age or over, except in the study by Pierce et al., which set the lower limit at 45 years (Pierce et al., 2018); or in the study conducted in Iran setting this age range at 60 years of age or over (Mortazavi et al., 2015). An appreciable increase in the age of the population receiving these treatments was apparent (Carew & Comiskey, 2018; Gutiérrez-Cáceres et al., 2019; Pierce et al., 2018; Rosen et al., 2011), as pointed out in the retrospective study by Dürseler with statistically significant results indicating an increase in treated patients aged 50 or over (Dürsteler-MacFarland et al., 2011). This significant increase in age also influenced the higher risk of death (Pierce et al., 2018).

It was found that these patients were less economically stable (Rosen et al., 2011), as their income came either from invalidity pensions or social benefits (Dürsteler-MacFarland et al., 2011; Gutiérrez-Cáceres et al., 2019).

From a gender perspective, all the studies found contained samples of men and women, except for the Iranian study in which the population was exclusively masculine (Mortazavi et al., 2015), and the proportion of men and women in treatment with methadone was found to be similar in all studies at around 80%-20% (Dürsteler-MacFarland et al., 2011; Gutiérrez-Cáceres et al., 2019). Only one of the studies applied a gender perspective from the study objectives (Hamilton & Grella, 2009), comparing whether differences existed in patients' social relations and health status. The study published by Tuchman was specific to women (Tuchman, 2010). This researcher explored how they experienced the arrival of menopause and whether they recognised or were confused over its symptoms. The findings showed that the symptoms were sometimes misidentified and associated with opiate withdrawal symptoms, potentially leading to a negative impact on their treatment.

Likewise, in one study references were found to the feelings of guilt experienced by treated patients, especially women (Hamilton & Grella, 2009; Hightower, 2016), about the effects inflicted on family relations. Other studies (Gutiérrez-Cáceres et al., 2019; Rajaratnam et al., 2009; Searby et al., 2015) described how the social exclusion caused by the stigma of methadone led patients to request or seek less assistance in treating other diseases, which resulted in their poorer perception of quality of life (Lofwall et al., 2005; Rosen et al., 2008).

b) **In relation to chronic problems:**

Three articles compared physical and mental diseases among age groups, ≥ 50 years as opposed to younger adults (Firoz & Carlson, 2004; Lofwall et al., 2005; Rajaratnam et al., 2009), and in all cases the older adult group presented a higher rate of chronic physical diseases such as hypertension (HTA), diabetes, asthma, or hepatic disease, but not of mental diseases, among which depression was the most common psychiatric diagnosis.

In the study by Maruyama (Maruyama et al., 2013), a group of adults over 45 years of age in treatment with methadone was compared with a general population group, finding a statistically significant higher prevalence of COPD and asthma in the first group.

In the studies describing the diseases affecting this population, a great number of comorbidities were reported (Doukas, 2014; Gutiérrez-Cáceres et al., 2019; Hamilton & Grella, 2009; Rosen al., 2011; Searby et al., 2015), both physical, such as high blood pressure which was significantly greater in men than in women (Rosen et al., 2008), and mental problems, where 40% of those interviewed had dual pathology (Notley et al., 2015), depression being the most common diagnosis (Mortazavi et al., 2015), especially among women (Rosen et al., 2008).

c) **In relation to tackling chronicity:**

Another problem apparent in this population was chronic consumption of other illegal substances, tobacco, or alcohol. Four articles were found that concluded that the older adult group consumed fewer illegal substances than the younger adult groups (Firoz & Carlson, 2004; Guo et al., 2010; Lofwall et al., 2005; Rajaratnam et al., 2009), giving them better expectations for the evolution of their treatment (Carew & Comiskey, 2018; Firoz & Carlson, 2004). Similarly, one specific article posited that a diagnosis of pathological gambling was associated to poorer adherence to treatment and to greater consumption of illegal substances but did not prove this hypothesis (Engel & Rosen, 2015).

Permanence in treatment was considered in six articles (Engel & Rosen, 2015; Guo et al., 2010; Gutiérrez-Cáceres et al., 2019; Hightower, 2016; Notley et al., 2013, 2015), while another three highlighted the increase in mean number of treatment duration years (Dürsteler-MacFarland et al., 2011; Hamilton & Grella, 2009; Rajaratnam et al., 2009) referring to their chronicity (Rosen et al., 2011).

The articles showed that studies no longer solely examine population characteristics, prevalence, and mortality (Gutiérrez-Cáceres et al., 2019; Notley et al., 2015), but also the points of view of patients in treatment: their preferences regarding health care professionals (Conner et al., 2010), the type of treatment and levels of satisfaction with the latter, including the opinions of carers (Guo et al., 2010). Other studies recommended the use of a specific therapy, such as Problem-Solving Therapy, adapted as necessary to the specific needs of the study population (Rosen et al., 2011), or envisaged future needs such as palliative care (Doukas, 2014).

The most recent publications contain direct references to the need to change treatments. Doukas (Doukas, 2014) proposed providing care at the hands of multidisciplinary teams. Two studies deem it necessary for health and social resources to work together to provide adequate care (Hightower, 2016), to the extent of integrating addiction therapy with geriatric or mental health treatment (Searby et al., 2015). McCall (McCall et al., 2017) argued in favour of including the suicide ideation protocol to reduce these. Doukas expressed the need to re-write the good practices handbooks on methadone treatment issued over ten years ago, adapting them more closely to current population profiles (Doukas, 2017). Nevertheless, in only one study were these patients asked a direct question about their future needs regarding treatment and their increasing age (Gutiérrez-Cáceres et al., 2019).

Table 3. *Results from the selected documents*

Reference	Aim or Hypothesis	Determinants of Socio-Economic Status	Chronic Problems	Tackling Chronicity
(Firoz & Carlson, 2004)	Hypothesis: patients over 55 years of age in methadone therapy, compared with younger patients, will develop a broader range of medical and psychiatric problems, and suffer a higher rate of unemployment and experience poorer results from treatment		- No statistically significant lower frequency of medical or mental disease is reported in younger patients. - Higher frequency of chronic diseases (diabetes, asthma, hypertension, hepatic disease...) in the older adult patient group. - Lower consumption of illegal substances in the older adult patient group.	No proof of the hypothesis that older patients experience worse results from treatment than younger patients.
(Lofwall et al., 2005)	To compare older patients' psychosocial, psychiatric, substance use, medical and legal characteristics against those of younger patients and the general population, by age and gender, in the USA.	Group of patients over 50 years: - Mean age at first use, excluding alcohol, higher than younger adults - Average years in treatment: 4.2, longer than younger adults - More years spent in prison	Group of patients over 50 years: - More health problems and poorer quality of health - Less use of illegal substances Majoritarian psychiatric diagnosis in both groups: major depression, no statistically significant diagnoses except for panic disorders which are more frequent among younger adult patients (p=0.054) The older adult group presents a statistically significant higher incidence of physical diseases than younger adults: cardiovascular (p=0.002), gastrointestinal (p=0.021), musculo-skeletal (p=0.006), hypertension (p=0.001). HIV and HCV similar in both groups	
(Rosen et al., 2008)	To assess the physical and mental situation of older adult patients in treatment with methadone		- In relation to physical health: Of the sample, 54.3% suffer arthritis, 44.9% suffer hypertension which is statistically significant (p=0.02) in men (52.2% vs. 29.2%), and 49.3% are diagnosed with hepatitis C. - In relation to mental health: The prevailing diagnosis is depression, which is higher among women but not statistically significant (43.8% vs. 27.2%) followed by anxiety affecting 29.7%. - 57.7% perceive their Quality of Life as poor. - During the study, 76.4% yielded a positive result when tested for illegal substances.	
(Conner & Rosen, 2008)	To examine self-stigmatisation and to explore the effects of experiencing several stigmas	Men report higher stigma perception than women. Of those interviewed, 79% reported cumulative addiction, methadone, and ageing stigmas.	Mental health stigma	Less seeking help because the stigma

(Rajaratnam et al., 2009)	To evaluate characteristics and adaptability to ageing among patients under methadone maintenance treatment (MMT)		- Longer periods in treatment - Higher rate of chronic diseases and higher need for medication during treatment - Less use of illegal substances	Less contact with health care services for monitoring chronic diseases
(Hamilton & Grella, 2009)	To examine whether gender differences are found between older adults with a history of heroin addiction, in terms of social and family relations and health-related problems	- Men: surprise at still being alive, fear of relapse and being sent to prison. - Women: feelings of guilt for affecting their family.	- Similar importance given to HCV*, HIV* and mental health which these patients relate to the losses suffered in their life. - Similar findings of organic pathologies related to lifestyle and age: arthritis, asthma, hepatic problems, hypertension.	23% have spent 10+ years in treatment with methadone
(Conner et al., 2010)	To examine the preferences of older adults in treatment with methadone regarding drug therapists			- Preference for therapists with similar age and race characteristics to those of the patient, to avoid causing greater stigmatisation. - No preferences shown about the therapist's gender.
(Tuchman, 2010)	To investigate the perception of symptoms of menopause and their associated causes among women in treatment with methadone	Marital status: single and lower level of education		Menopause symptoms are mistaken with opiate withdrawal symptoms. Work is needed to clarify and avert this error.
(Guo et al., 2010)	To examine the characteristics of elderly opiate dependent patients in treatment with methadone, to assess the impact on the use of illegal opiates and their social and psychological functioning and to examine the viability of the support provided by the carers participating in the monthly 'take-home'		Almost less consumption of illegal opiates.	- High level of satisfaction with the treatment, both on behalf of carers and clients. - Stabilisation with small doses of methadone (≤ 10 mg). - Releases elderly clients from weekly visits to the clinic: stigma reduction. - Methadone is perceived as an ordinary medicine.
(Rosen et al., 2011)	Review of the literature on the benefits of PST therapy * in older adults and its potential application in methadone treatment centres	Need to adapt PST to their psychosocial: economic instability	- Physical: greater neurological deficiency - Psychological: failure of previous treatments	- Need to provide specific training for professionals treating this population: case study. - Need for public policies for funded treatment.

(Rosen et al., 2011)	Literature review to identify studies referring to the physical and mental health characteristics of the hero-in-user population over 50 years of age.	Qualitative studies highlight ageing heroin users' changing profiles	- Higher prevalence of comorbidities than the general population - MMT is more positive for treating mental and physical problems satisfactorily. - The model envisages addiction as a chronic disease owing to the high prevalence of comorbidities. - Suggests the need for changes in the treatment of mental health and geriatrics
(Dürsteler-Mac-Farland et al., 2011)	To evaluate the rising trend in age and the progress observed among methadone users in Basel.	- Statistically significant increase ($p<0.001$) of 4.2% adults over 50 years of age in treatment - The proportion of men and women in treatment is similar. - Growing number of individuals receiving invalidity pensions or social aid.	- Of the 2003 sample, 47.8% began treatment with methadone in or before 1995 - Significant increase ($p<0.001$) in the dose of methadone administered. - Statistically significant consumption of illegal substances ($p<0.001$)
(Maruyama et al., 2013)	To evaluate whether older adults in treatment with methadone are significantly different to a control group in terms of medication dispensed for hypertension, chronic obstructive pulmonar disease (COPD), diabetes and depression	No reference to gender-related differences	- Statistical significance in cases: COPD ($p=<0.0001$), depression ($p=<0.0001$). - Higher prevalence in Controls: hypertension and diabetes.

(Notley et al., 2013)	To understand experiencing long-term opiates maintenance (over 5 years) and to identify the barriers to recovery			1. Experiencing long-term methadone maintenance - Positive effects: stability, increased self-help, re-focusing other aspects of living as job and family - Negative effects: addict stigma, unwanted secondary effects of methadone, ambivalence of abstinence as the final objective 2. Barriers to recovery - Dependent on the individual: loneliness, fear of abstinence syndrome, labile emotional states, or mental disease, establishing non-addict identity. - Social: lack of social network support beyond the treatment-related circle. - Women: partner is user or in treatment, previous negative detoxification experience - Structural: stigma, discrepancy with health professionals over the treatment objective - Temporal: "not being ready", "not having anything else"
(Doukas, 2014)	To make visible the need for workers dealing with older patients in treatment with methadone to adopt a palliative care philosophy. To make recommendations regarding the areas in which therapists should have the necessary knowledge and tools to provide specific palliative care to a population with multiple needs.		Greater comorbidity of mental diseases, especially depression, prevalent in women	- Need for professionals trained in palliative care: adapted to the patient's needs. - Encouraging care at the hands of multidisciplinary teams - Recommendations regarding areas where professionals should possess further knowledge in, for instance, comorbidities, mental pathology, or stigma reduction. - Importance of reducing stigmas that hinder access to health services

(Searby et al., 2015)	To examine the literature on comorbidity of mental disease in older adults in treatment with methadone, and to explore future changes in this growing group of adults that is ageing in comparison with older adults in psychiatry units.		Higher incidence of mental problems, especially depression, and of physical diseases	- Social isolation, stigmatisation and mistrust are obstacles to requesting treatment at mental health services - Recommendation to include opiate replacement therapy through the mental health network - Need for therapeutic bonds between professionals and patients, involving the latter in the choice of treatment
(Notley et al., 2015)	To explore the experiences of people in long term treatment with methadone (5+ years)	- Perception of a normal lifestyle as compared with the previous situation as substance user - Ambivalence regarding methadone: feelings of stigma that increase discrimination and social barriers to recovery	Of those interviewed, 40% suffer dual pathology	
(Engel & Rosen, 2015)	To examine the relationship between pathological gambling and poorer adherence to the programme among patients in treatment with methadone	No differences exist based on gender, race, or age between groups.	No relationship was found between gambling problems and poorer adherence to treatment or use of illegal substances	
(Mortazavi et al., 2015)	Study on the prevalence of psychiatric disorders in elderly substance users and other related factors	- Mean age 64.06 ± 4.78 years - Statistically significant relationship between family history of substance use and age at first use	- Main substance consumed, heroin, secondary substances, alcohol, and marihuana. - Higher rate of mental pathology in relation to lower age at first use and to abuse of more than one substance. - Predominance of diagnoses under Axis I, major depression being the most common	
(Hightower, 2016)	To assess the relationship between methadone treatment and life experiences of opiate consumers in the 50-55 years age bracket.		Affectation of mental health due to losses suffered.	- Methadone therapy ambivalence: Positive: leading a normal lifestyle, acceptance of their experience by younger patients, fear of withdrawal symptoms. Negative: stigma in relation to others, more notably in women (families), the need to visit the clinic daily or weekly. - The collaboration of several resources is deemed necessary to ensure treatment is adapted to each patient.

(McCall et al., 2017)	To examine the effectiveness of including suicide risk analysis in methadone therapy treatments in older adults.			Treatments should incorporate a protocol to identify suicide ideation to reduce them
(Doukas, 2017)	To determine which contributions have been added to the literature since the previous review (2014) and to identify and compare the relevant items studied by scholars taking an interest in this population's ageing			- Treatment type is starting to be examined, rather than only the population's characteristics and prevalence or mortality - No new studies employing qualitative methods were found - Obsolete guides to acting on this population: these need to be adapted to people's current needs.
(Carew & Comiskey, 2018)	To conduct a review of opiate dependence and associated treatment objectives in older adult users	- Decrease in the number of treatments for opiate consumers but increase in the mean age at admission - No consensus on the age for the term "old" - Existence of two kinds of major opiate consumers: those who commenced at a young age and continue, and those who were older at first use.		Older adults' perspectives for treatment results are more favourable than for younger adults, and women's perspectives are worse than men.
(Pierce et al., 2018)	To examine, in England, whether the risk of death specifically from methadone increases with heroin users' age; and, in the risk group relative to the age at death specifically from methadone, which patients are clients of Scottish methadone programmes.	Mortality increases significantly with age among people in treatment with methadone (p=0.001), independently of gender	Likewise, people in treatment with methadone who consume cocaine (p=0.006) and benzodiazepines (p=0.017) face a statistically significant higher risk	
(Gutiérrez-Cáceres et al., 2019)	To describe the socio-demographic and clinical profile of people in treatment with methadone at the CAD* Latina (Madrid, Spain), exploring the perception of methadone in their lives and ageing process, as well as their future health-related needs and care requirements, from the DSS* framework perspective.	Mean age higher than the population of Madrid: 48.3 years. Of patients in treatment, 66.7% are ≥45 years of age; 66.6% have a low socio-economic level; and no statistically significant gender differences were found. The greater the age, the higher the risk of social and health inequalities.	Presence of chronic diseases: HIV (24.5%); HCV (65.1%) and mental disease (47.3%), while no statistically significant gender differences were found.	Mean number of years undergoing treatment is 13.6 No future needs in relation to treatment are mentioned Need to reduce stigma and adapt resources and policies to the age increase.

Discussion

The outcome of this review highlights that over recent years the increasing age of opiate consumers, their specific characteristics and their particular needs (Firoz & Carlson, 2004; Lofwall et al., 2005; Rosen et al., 2008), as well as those of patients in treatment with methadone (Dürsteler-MacFarland et al., 2011), have been examined although no references were found in any of the studies analysed to these patients' opinions on how to improve and adapt available treatments to their current needs.

Treatments that were designed as harm reducing strategies to address the epidemic of heroin consumption (Smye et al., 2011) have become long-term treatments vital to individuals' health (Notley et al., 2013).

And, although patients rate their methadone therapy positively, as it has allowed them to lead a normal life (Gutiérrez-Cáceres et al., 2019; Hightower, 2016), even to the extent of expressing surprise at being alive considering their background (Hamilton & Grella, 2009), the incidence of diseases related to previous or current substance use, such as HIV or hepatitis C, or others such as diseases of the respiratory system, is more common in persons taking methadone than in those who do not (Maruyama et al., 2013). Comorbidities such as these may imply higher medication intake, more medical checks, and more intensive follow-up of specific pathologies (Gutiérrez-Cáceres et al., 2019; Rajaratnam et al., 2009) resulting in a perception of poorer quality of life (Lofwall et al., 2005; Rosen et al., 2008) and potentially increasing these patients' mortality rate with respect to those not in treatment with methadone (Pierce et al., 2018). Furthermore, not only is the prevalence of physical diseases higher among these patients, but they also face a greater likehood of a mental illness diagnosis (Gutiérrez-Cáceres et al., 2019; Searby et al., 2015), depression being thest common (Maruyama et al., 2013) particularly among women (Rosen et al., 2008).

We should not overlook that these patients also have to struggle with the stigma of addiction (Notley et al., 2013) and the impact this has on their social environment, especially within their family circle in the case of women (Hamilton & Grella, 2009; Hightower, 2016), to which must be added the stigma of methadone itself and that of becoming old (Conner & Rosen, 2008; Gutiérrez-Cáceres et al., 2019). Therefore, taking their opinions into account to make them feel more comfortable at their treatment centres (Conner et al., 2010; Gutiérrez-Cáceres et al., 2019) or providing more standardised resources that do not require reporting daily to the dispensing stations (Hightower, 2016), raises the level of satisfaction with the treatment both among those receiving it and their carers, thus aiding stigma reduction and enhancing the perception of methadone as a regular medication (Guo et al., 2010).

All the above allows us to deem viable a model in which addiction is approached as a chronic disease, and to take it into account in its treatment (Rosen et al., 2011). Is it essential to adapt care to the specific needs of a population ageing in methadone programmes (Carew & Comiskey, 2018; Dürsteler-MacFarland et al., 2011; Gutiérrez-Cáceres et al., 2019). With this aim, not only should resources be updated (Conner et al., 2010), but training should be provided for the professionals assisting this population (Doukas, 2014; Rosen et al., 2011). This calls for collaboration among several levels of care and services (Hightower, 2016), and requires therapeutic alliances between professionals and patients to involve the latter in their choice of treatment (Searby et al., 2015). To this end, it is fundamental to review the policies governing this type of treatment and their repercussions on the health of these patients (Cotton et al., 2017; Doukas, 2017).

In this review, a considerable number of studies have been found to refer to the more advanced age of substance users worldwide, as well as of people in treatment with opiate replacement drugs not specific to methadone (Carlsen et al., 2019). The articles found in Spanish, such as the study by Bobes & Bobes, refer to the long-term effectiveness of methadone treatment but not to the people undergoing this treatment (Bobes García & Bobes Bascarán, 2012); others, such as Quimbayo or Roncero et al., refer to the considerations regarding older adults who are consumers of substances in general (Quimbayo Díaz, 2018; Roncero et al., 2011), including a recommendation for long-term or indefinite housing resources or the need for coordination between public administrations (Lagares Roibás et al., 2010); or, as in the article by Pedrero-Pérez, refer to the long-term effect of methadone on patients' quality of life according to the doses they take (Pedrero-Pérez & MethaQoL, 2016).

Conclusions

The characteristics of people in treatment with methadone at present differ greatly from those commencing methadone maintenance programmes in the late 1980s and early 1990s. To the diseases prevalent among this population, we must add those related to the increase in age and the effects of long-term treatment. This presents us with highly vulnerable patients who are more likely to suffer health-related social inequality.

Owing to the scarcity of studies found, especially beyond the North American continent, this phenomenon requires further study, most particularly from a qualitative approach and a gender perspective, to benefit from the point of view of those receiving the treatment. It is necessary to update resources that have been available for many years but still do not facilitate stigma inclusion or reduction among the patients treated. Similarly, further specific resources should be created for these new needs, for which the collaboration of public health policymakers is indispensable.

References

Bobes García, J., & Bobes Bascarán, M. T. (2012). Efectividad a largo plazo de los tratamientos de mantenimiento con metadona en personas con adicción a derivados opiáceos. *Adicciones*, *24*(3), 179. https://doi.org/10.20882/adicciones.87

Carew, A. M., & Comiskey, C. (2018). Treatment for opioid use and outcomes in older adults: A systematic literature review. *Drug and Alcohol Dependence*, *182*, 48-57. https://doi.org/10.1016/j.drugalcdep.2017.10.007

Carlsen, S.-E. L., Gaulen, Z., Alpers, S. E., & Fjaereide, M. (2019). Beyond medication: Life situation of older patients in opioid maintenance treatment. *Addiction Research & Theory*, *27*(4), 305-313. https://doi.org/10.1080/16066359.2018.1515351

Chang, K.-C., & Lin, C.-Y. (2015). Effects of publicly funded and quality of life on attendance rate among methadone maintenance treatment patients in Taiwan: An 18-month follow-up study. *Harm Reduction Journal*, *12*(1), 40. https://doi.org/10.1186/s12954-015-0076-8

Conner, K. O., & Rosen, D. (2008). "You're nothing but a junkie": Multiple experiences of stigma in an aging methadone maintenance population. *Journal of Social Work Practice in the Addictions*, *8*(2), 244-264. https://doi.org/10.1080/15332560802157065

Conner, K. O., Rosen, D., Wexle, S., & Brown, C. (2010). "It's like night and day. He's white. I'm black": Shared stigmas between counselors and older adult methadone clients. *Best Practices in Mental Health*, *6*, 17-32. https://www.ingentaconnect.com/content/follmer/bpmh/2010/00000006/00000001/art00003#expand/collapse

Consejería de Sanidad de la Comunidad Autónoma de Madrid. (2013). *Estrategia de atención a pacientes con enfermedades crónicas en la Comunidad de Madrid.* Consejería de Sanidad. https://www.comunidad.madrid/transparencia/informacion-institucional/planes-programas/estrategia-atencion-personas-enfermedades-cronicas

Cotton, B. P., Bryson, W. C., & Bruce, M. L. (2017). Methadone Maintenance Treatment for older adults: Cost and logistical considerations. *Psychiatric Services*, *69*(3), 338-340. https://doi.org/10.1176/appi.ps.201700137

Dirección General de Salud Pública y Sanidad Exterior, & Ministerio de Sanidad y Política Social. (2012). Propuesta de políticas e intervenciones para reducir las desigualdades sociales en salud en España. *Gaceta Sanitaria*, *26*(2), 182-189. https://doi.org/10.1016/j.gaceta.2011.07.024

Dole, V. P., & Nyswander, M. (1965). Medical treatment for diacetylmorphine (heroin) addiction: A clinical trial with methadone hydrochloride. *JAMA*, *193*(8), 646-650. https://doi.org/10.1001/jama.1965.03090080008002

Doukas, N. (2014). Are methadone counselors properly equipped to meet the palliative care needs of older adults in Methadone Maintenance Treatment? Implications for training. *Journal of Social Work in End-Of-Life & Palliative Care*, *10*(2), 186-204. https://doi.org/10.1080/15524256.2014.906370

Doukas, N. (2017). Older adults prescribed methadone for opiate replacement therapy: A literature review. *Journal of Addiction and Preventive Medicine*, *02*(01). https://doi.org/10.19104/japm.2017.109

Dürsteler-MacFarland, K. M., Vogel, M., Wiesbeck, G. A., & Petitjean, S. A. (2011). There is no age limit for methadone: A retrospective cohort study. *Substance Abuse Treatment, Prevention, and Policy*, *6*(1), 9. https://doi.org/10.1186/1747-597X-6-9

EMCDDA. (2020). *Informe europeo sobre drogas 2020: Cuestiones clave.* Publications Office. https://data.europa.eu/doi/10.2810/315023

Engel, R. J., & Rosen, D. (2015). Pathological gambling and treatment outcomes for adults age 50 or older in Methadone Maintenance Treatment. *Journal of Gerontological Social Work*, *58*(3), 306-314. https://doi.org/10.1080/01634372.2014.960989

Firoz, S., & Carlson, G. (2004). Characteristics and treatment outcome of older Methadone-Maintenance patients. *The American Journal of Geriatric Psychiatry*, *12*(5), 539-541. https://doi.org/10.1097/00019442-200409000-00015

Gol-Montserrat, J., Llano, J. E. del, Amo, J. del, Campbell, C., Navarro, G., Segura, F., Suárez, I., Teira, R., Brañas, F., Serrano-Villar, S., Moreno, S., Morillo, R., Fernández, E., Marco, M. P., Blanch, J., Castaño, M., Pujol, F., Fuster, M. J., Hernández, J. S., … Elizondo, N. (2018). VIH en España 2017: Políticas para una nueva gestión de la cronicidad más allá del control virológico. *Revista Española de Salud Pública*, *92*. http://scielo.isciii.es/scielo.php?script=sci_abstract&pid=S1135-57272018000100305&lng=es&nrm=iso&tlng=es

Guo, S., Winslow, M., Manning, V., & Thane, K. K. (2010). Monthly take-home Methadone Maintenance Regime for elderly opium- dependent users in Singapore. *Annals Academy of Medicine*, *39*(6), 429. https://annals.edu.sg/pdf/39VolNo6Jun2010/V39N6p429.pdf

Gutiérrez-Cáceres, S., Pedraz-Marcos, A., & Serrano-Gallardo, P. (2019). Envejecer en un programa de mantenimiento con metadona. Una perspectiva desde el marco de los determinantes sociales de la salud. *Rev. esp. Salud Pública*, *93*, e201908048. https://pesquisa.bvsalud.org/portal/resource/%20es/mdl-31447482

Hamilton, A. B., & Grella, C. E. (2009). Gender differences among older heroin users. *Journal of Women & Aging*, *21*(2), 111-124. https://doi.org/10.1080/08952840902837129

Hightower, L. (2016). *A phenomenological study of Methadone Treatment by opiate-dependent individuals ages 50-55 years* [Dissertations & Theses, Walden University]. https://scholarworks.waldenu.edu/cgi/viewcontent.cgi?article=3418&context=dissertations&httpsredir=1&referer=

Lagares Roibás, A., López Melendro, A. I., & Gallego Montes, M. J. (2010). Perspectivas de futuro y propuestas de recursos terapéuticos para adictos de edad avanzada. *Revista Española de Drogodependencias*, *35*(2). http://www.aesed.com/descargas/revistas/v35n2_4.pdf

Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: Advancing the methodology. *Implementation Science*, *5*(1), 69. https://doi.org/10.1186/1748-5908-5-69

Lofwall, M. R., Brooner, R. K., Bigelow, G. E., Kindbom, K., & Strain, E. C. (2005). Characteristics of older opioid maintenance patients. *Journal of Substance Abuse Treatment*, *28*(3), 265-272. https://doi.org/10.1016/j.jsat.2005.01.007

Madrid Salud. (2018). *Memoria Anual 2017*. http://www.madridsalud.es/pdf/memorias/Memoria_anual_MS2017completa.pdf

Maruyama, A., Macdonald, S., Borycki, E., & Zhao, J. (2013). Hypertension, chronic obstructive pulmonary disease, diabetes and depression among older methadone maintenance patients in British Columbia: Diseases for MMT. *Drug and Alcohol Review*, *32*(4), 412-418. https://doi.org/10.1111/dar.12031

Mattick, R. P., Breen, C., Kimber, J., & Davoli, M. (2009). Methadone Maintenance Therapy versus no opioid replacement therapy for opioid dependence. *Cochrane Database of Systematic Reviews*. https://doi.org/10.1002/14651858.CD002209.pub2

McCall, J., Brusoski, M., & Rosen, D. (2017). Research with older adult methadone clients: The importance of monitoring suicide ideation. *Journal of Gerontological Social Work*, *60*(6-7), 458-470. https://doi.org/10.1080/01634372.2017.1328479

Mortazavi, S. S., Shati, M., Malakouti, S. K., & Kazem, M. (2015). Psychiatric comorbidities among iranian elderly patients on Methadone Maintenance Treatment. *Archives of Iranian Medicine*, *18*(11), 740-746.

Notley, C., Blyth, A., Maskrey, V., Craig, J., & Holland, R. (2013). The experience of long-term Opiate Maintenance Treatment and reported barriers to recovery: A qualitative systematic review. *European Addiction Research*, *19*(6), 287-298. https://doi.org/10.1159/000346674

Notley, C., Blyth, A., Maskrey, V., Pinto, H., & Holland, R. (2015). Exploring the concepts of abstinence and recovery through the experiences of Long-Term Opiate Substitution. *Substance Abuse*, *36*(2), 232-239. https://doi.org/10.1080/08897077.2014.941085

OMS, & Management of Substance Dependence Team. (2004). *Neurociencia del consumo y dependencia de sustancias psicoactivas*. World Health Organization. https://www.who.int/substance_abuse/publications/neuroscience_spanish.pdf

Pedrero-Pérez, E. J., & MethaQoL, G. (2016). Dosis de metadona y su relación con calidad de vida, satisfacción, psicopatología, rendimiento cognitivo y consumo adicional de sustancias no prescritas. *Adicciones*, *29*(1), 37. https://doi.org/10.20882/adicciones.831

Pierce, M., Millar, T., Robertson, J. R., & Bird, S. M. (2018). Ageing opioid users' increased risk of methadone-specific death in the UK. *International Journal of Drug Policy*, *55*, 121-127. https://doi.org/10.1016/j.drugpo.2018.02.005

Quimbayo Díaz, J. H. (2018). El adulto mayor frente a las adicciones, un problema de salud pública. *Revista Edu-fisica.com Ciencias Aplicadas al Deporte*, *10*(22), 109-118. http://revistas.ut.edu.co/index.php/edufisica/article/view/1286

Rajaratnam, R., Sivesind, D., Todman, M., Roane, D., & Seewald, R. (2009). The aging methadone maintenance patient: Treatment adjustment, long-term success, and quality of life. *J Opioid Manag*, *5*, 27-37. https://doi.org/10.5055/jom.2009.0004

Roncero, C., Bachiller, D., Ross, E., & Casas, M. (2011). Ancianos y drogodependencias. En *Manual de Trastornos Adictivos* (2.ª ed., pp. 268-275).

Rosen, D., Hunsaker, A., Albert, S. M., Cornelius, J. R., & Reynolds, C. F. (2011). Characteristics and consequences of heroin use among older adults in the United States: A review of the literature, treatment implications, and recommendations for further research. *Addictive Behaviors*, *36*(4), 279-285. https://doi.org/10.1016/j.addbeh.2010.12.012

Rosen, D., Morse, J. Q., & Reynolds, C. F. (2011). Adapting problem-solving therapy for depressed older adults in methadone maintenance treatment. *Journal of Substance Abuse Treatment*, *40*(2), 132-141. https://doi.org/10.1016/j.jsat.2010.09.003

Rosen, D., Smith, M. L., & Reynolds, C. F. (2008). The prevalence of mental and physical health disorders among older methadone patients. *The American Journal of Geriatric Psychiatry*, *16*(6), 488-497. https://doi.org/10.1097/JGP.0b013e31816ff35a

Rúa Vieites, A., Martínez de Ibarreta Zorita, C., Redondo Palomo, R., & Fabra Florit, M. E. (2017). *Informe 2015 vulnerabilidad social. Estudio estadístico*. https://repositorio.comillas.edu/xmlui/handle/11531/22993

Searby, A., Maude, P., & McGrath, I. (2015). An Ageing Methadone Population: A Challenge to Aged Persons' Mental Health Services? *Issues in Mental Health Nursing*, *36*(11), 927-931. https://doi.org/10.3109/01612840.2015.1081655

Smye, V., Browne, A. J., Varcoe, C., & Josewski, V. (2011). Harm reduction, methadone maintenance treatment and the root causes of health and social inequities: An intersectional lens in the Canadian context. *Harm Reduction Journal*, *8*(1), 17. https://doi.org/10.1186/1477-7517-8-17

Solar, O., & Irwin, A. (2007). *A conceptual framework for action on the social determinants of health.* www.who.int/social_determinants/resources/csdh_framework_action_05_07.pdf

Tran, B. X., Vu, P. B., Nguyen, L. H., Latkin, S. K., Nguyen, C. T., Phan, H. T. T., & Latkin, C. A. (2016). Drug addiction stigma in relation to methadone maintenance treatment by different service delivery models in Vietnam. *BMC Public Health*, *16*(1), 238. https://doi.org/10.1186/s12889-016-2897-0

Tuchman, E. (2010). Menopause symptom attribution among midlife women in Methadone Treatment. *Social Work in Health Care*, *49*(1), 53-67. https://doi.org/10.1080/00981380902958486

Ubuguyu, O., Tran, O. C., Bruce, R. D., Masao, F., Nyandindi, C., Sabuni, N., McCurdy, S., Mbwambo, J., & Lambdin, B. H. (2016). Improvements in health-related quality of life among methadone maintenance clients in Dar es Salaam, Tanzania. *International Journal of Drug Policy*, *30*, 74-81. https://doi.org/10.1016/j.drugpo.2016.03.005

Weiss, R. D., & Rao, V. (2017). The Prescription Opioid Addiction Treatment Study: What have we learned. *Drug and Alcohol Dependence*, *173*, S48-S54. https://doi.org/10.1016/j.drugalcdep.2016.12.001

WHO. (2016). *Determinantes sociales de la salud*. World Health Organization. https://www.who.int/social_determinants/es/